Trend Study 18-27-02

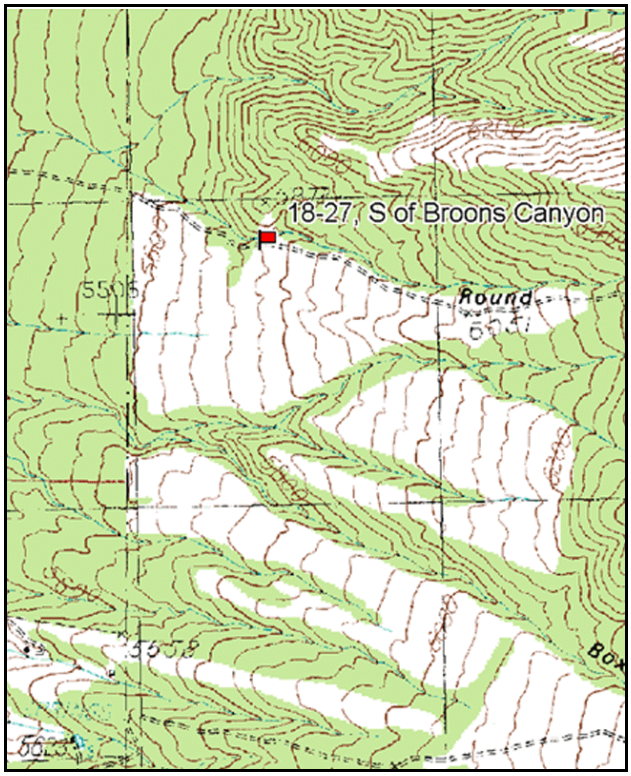
Study site name: South of Broons Canyon . Vegetation type: Antelope bitterbrush .

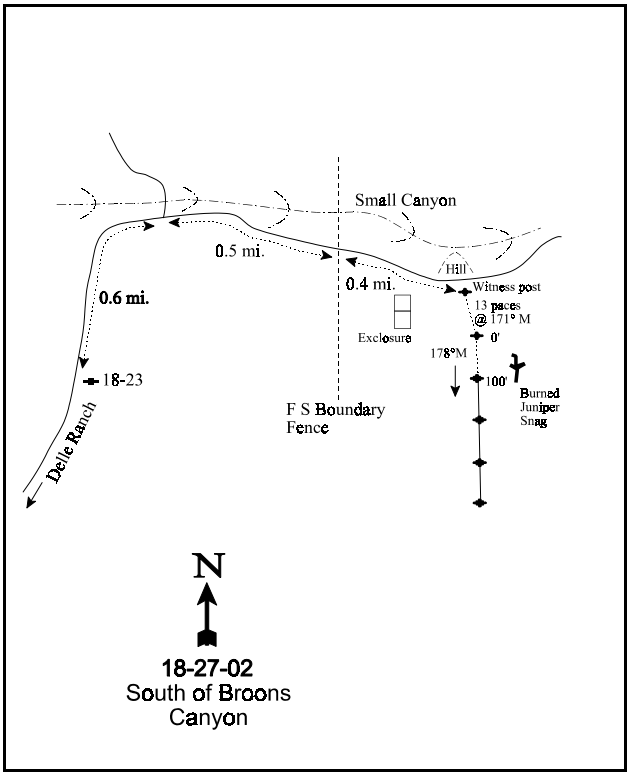
Compass bearing: frequency baseline 178 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Approximately 11 miles south of the Timpie interchange on I-80, turn east off the Skull Valley highway onto the graded Delle Ranch road. Take this road 1.9 miles to a major intersection. Bear left (right fork goes to Delle Ranch) and go 0.5 miles to a fork. Bear left off the graded road and go 0.65 miles to the location of Study #12-l. Continue 0.6 miles to a fork, go right. Continue approximately 0.5 miles to the Forest Service boundary fence. From the fence, go 0.4 miles to a witness post on the right side of the road. From this short fencepost, walk 13 paces south to the 0-foot baseline stake.





Map Name: Salt Mountain

Diagrammatic Sketch

Township 3S , Range 7W , Section 5

GPS: NAD 27, UTM 12S 4493829 N 359422 E

DISCUSSION

South of Broons Canyon - Trend Study No. 18-27

This study lies just above the Forest Service exclosure located in the first drainage south of Broons Canyon. The range type is antelope bitterbrush with lesser amounts of mountain big sagebrush interspersed throughout. The area slopes gently (5%) to the west and appears to have been the site of an old burn. The site elevation is approximately 5,800 feet, which reportedly is near the upper limit of deer winter range. However, during the 1983 reading, deer pellet groups were abundant and there was moderate utilization of the principle browse plants. In 1997, deer pellet group quadrat frequency was moderately high at 27%. Cattle also graze the area and were observed at the time the study was established. Cattle use in 1997 was considered light. A pellet group transect read on site in 2002 estimated 56 deer days use/acre (139 ddu/ha). Rabbit pellets were also common. Most of the deer pellet groups encountered in 2002 were from winter use, but about 5% were from spring use.

Soil is derived from igneous alluvium and is gravelly to sandy in texture. Soil textural analysis indicates a sand clay loam with a neutral reaction (pH 6.7). Effective rooting depth was estimated at 12 inches with a soil temperature of 68˚ F. This moderately high of a soil temperature could be very detrimental to the establishment of cool season perennial plants during long periods of summer drought. Large to medium sized rocks are common on the soil surface. There is a fair amount of protective cover from the herbaceous species, but most of the vegetation cover comes from shrub crowns. Some sheet erosion is occurring but it is not excessive. Cheatgrass remains the principle understory component. The erosion condition class was stable in 2002.

This area has always possessed an especially hardy and productive population of antelope bitterbrush. This ecotype exhibits a semi-erect growth form with some "stem layering" apparent. There is also noticeable evidence of natural hybridization with Stansbury cliffrose. Utilization was mostly moderate (83%) in 1983 with excellent seed production. This area could be a potentially important seed collection site where seeds mature sometime in the last half of July, depending upon local weather. The proportion of the population that was classified as having moderate use steadily declined between 1983 and 1997 (83% to 15%). Utilization was moderate to heavy in 2002. Bitterbrush is very thick providing 62% of the total browse cover in 1997 and 70% in 2002. Total canopy cover was estimated at 39% in 2002. Density of this thick layering stand is difficult to estimate. In some places it is hard to walk through. Density was estimated at around 670 plants/acre in 1989 and 1997 increasing to 1,580 in 2002. Some of this increase is obviously sampling error, but bitterbrush did also increase in strip frequency and average cover. Vigor remains good and there are few decadent plants on site. Annual leader growth was excellent in 2002, averaging 4.6 inches. Flowering and seed production were variable in 2002 due to drought.

Mountain big sagebrush is present in moderate numbers and is of secondary importance. It made up 35% of the browse cover in 1997 and 26% in 2002. It has steadily increased in density since 1989. Utilization has been mostly light, vigor generally good, and decadence low. A few other less desirable shrubs comprise the remainder of the browse composition. With the exception of a moderately sparse but decreasing population of broom snakeweed, all appear to have relatively low but stable populations.

Herbaceous composition consists chiefly of grasses, especially cheatgrass brome which made up 57% of the grass cover in 1997, increasing to 94% in 2002. Sandberg bluegrass and bluebunch wheatgrass make up the majority of the remaining grass cover, although both have declined significantly in nested frequency between 1997 and 2002. The potential fire hazard depends primarily on abundance and growth of cheatgrass. Current fire potential is moderately high. The site supports a diverse composition of forbs but only a few species occur more than occasionally. However, a few good to moderately palatable species provide a small amount of forage. Some of these in the past have shown evidence of utilization. Most important are common stickseed, Indian paintbrush, gray lomatium, arrowleaf balsamroot, and redroot eriogonum.

1983 APPARENT TREND ASSESSMENT

Both soil and vegetative trend appear stable to improving. This is a favorable site that should be managed to at least maintain the present plant composition. Further improvement could be realized if cheatgrass brome were replaced by a more dense and diverse perennial herbaceous composition.

1989 TREND ASSESSMENT

Trend for soil is considered stable. Cover of bare ground is low with abundant protective ground cover to prevent most erosion. There was a slight increase in the percentage of decadence in bitterbrush and mountain big sagebrush, but this is still not considered very high. The densities of both populations have shown slight decreases in their respective populations, however this could mostly be reflective of the extended drought and the relatively small sample taken for browse species. Trend for browse would be assessed as stable. The trend for the herbaceous understory is also stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

1997 TREND ASSESSMENT

Trend for soil is slightly improved with good protective plant cover and percent bare soil has decreased to 4%. The trend for browse, primarily bitterbrush and mountain big sagebrush, is slightly improved with decreases in percent decadence and a lower proportion of plants showing moderate use. The herbaceous understory has shown little change through time with the majority of the grass production (cover) coming from cheatgrass. Trend for the herbaceous species is stable. However, the amount of cheatgrass in the understory still posses a major problem for fire.

TREND ASSESSMENT
soil - slightly up (4)
browse - slightly up (4)
herbaceous understory - stable, but still too much cheatgrass in the understory (3)

2002 TREND ASSESSMENT

Trend for soil is stable. Litter cover has declined but vegetation cover has increased and there is little exposed bare ground. There is abundant protective ground cover and little erosion occurring on site. Trend for browse is up slightly for bitterbrush and mountain big sagebrush. Utilization of bitterbrush was moderate to heavy in 2002, but vigor remained good and there were few decadent plants sampled. Density of bitterbrush increased. However, some of the increase is likely due to sampling error due to the thick nature of the bitterbrush stand which is also reproducing by layering. Average cover and strip frequency increased and annual leader growth was excellent averaging 4.5 inches. Density of sagebrush also increased. They show mostly light use, good vigor and low decadence. Trend for the herbaceous understory is down. Sum of nested frequency for perennial grasses declined including a significant decline in the nested frequency of the primary perennial species, bluebunch wheatgrass and Sandberg bluegrass. Cheatgrass is abundant and remained stable in frequency while average cover doubled. Cheatgrass now provides 94% of the total grass cover with a cover value of 25%. Nested frequency for perennial forbs also declined dramatically and the number of species sampled fell from 29 in 1997 to only 15 in 2002.

TREND ASSESSMENT
soil - stable (3)
browse - slightly up (4)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 18 , Study no: 27

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	$_{b}$138	$_{b}$109	$_{b}$124	$_{a}$45	52	40	40	22	3.69	.96
G	Bromus tectorum (a)	-	-	338	339	-	-	99	97	10.86	25.41
G	Melica bulbosa	-	-	20	7	-	-	7	2	.30	.36
G	Poa fendleriana	-	5	4	4	-	3	1	1	.00	.15
G	Poa secunda	$_{b}$138	$_{b}$159	$_{b}$141	$_{a}$21	62	60	54	10	4.19	.22
Total for Annual Grasses		0	0	338	339	0	0	99	97	10.86	25.41
Total for Perennial Grasses		276	273	289	77	114	103	102	35	8.20	1.70
Total for Grasses		276	273	627	416	114	103	201	132	19.07	27.11
F	Agoseris glauca	$_{a}$-	$_{b}$18	$_{a}$3	$_{a}$-	-	9	1	-	.00	-
F	Alyssum alyssoides (a)	-	-	41	26	-	-	14	8	.16	.12
F	Allium spp.	$_{A}$3	$_{a}$24	$_{b}$63	$_{a}$27	2	10	26	14	.53	.49
F	Antennaria rosea	2	-	-	-	1	-	-	-	-	-
F	Astragalus spp.	$_{A}$2	$_{b}$17	$_{a}$1	$_{a}$-	1	12	1	-	.00	-
F	Balsamorhiza sagittata	-	1	2	1	-	1	2	1	.21	.03
F	Castilleja linariaefolia	-	-	5	-	-	-	2	-	.01	-
F	Calochortus nuttallii	3	3	5	-	1	1	4	-	.02	-
F	Chenopodium spp. (a)	-	-	4	-	-	-	1	-	.00	-
F	Cirsium neomexicanum	$_{ab}$6	$_{b}$12	$_{ab}$5	$_{a}$-	3	5	4	-	.20	-
F	Comandra pallida	-	-	-	-	-	-	-	-	.00	-
F	Collinsia parviflora (a)	-	-	31	27	-	-	13	12	.11	.13
F	Crepis acuminata	5	7	4	11	2	3	3	5	.09	.15
F	Descurainia spp. (a)	-	-	3	-	-	-	1	-	.00	-
F	Epilobium brachycarpum (a)	-	-	$_{b}$15	$_{a}$-	-	-	7	-	.06	-
F	Erodium cicutarium (a)	-	-	$_{b}$32	$_{a}$5	-	-	14	2	.31	.03
F	Eriogonum racemosum	-	1	2	-	-	1	2	-	.03	-
F	Galium boreale	$_{a}$-	$_{c}$33	$_{b}$17	$_{a}$-	-	13	7	-	.37	-
F	Hackelia patens	$_{a}$39	$_{a}$28	$_{b}$88	$_{a}$40	18	16	38	19	3.30	1.24
F	Holosteum umbellatum (a)	-	-	$_{b}$99	$_{a}$13	-	-	38	6	.66	.05
F	Lactuca serriola	$_{a}$-	$_{a}$-	$_{b}$11	$_{a}$-	-	-	7	-	.06	-
F	Lithospermum ruderale	3	2	3	2	3	1	3	2	.56	.30
F	Lomatium grayi	17	22	19	9	9	12	11	5	.38	.10
F	Lygodesmia spp.	$_{a}$-	$_{a}$-	$_{b}$13	$_{a}$-	-	-	7	-	.06	-
F	Machaeranthera canescens	$_{a}$-	$_{a}$-	$_{b}$14	$_{a}$-	-	-	8	-	.04	-
F	Microsteris gracilis (a)	-	-	$_{b}$11	$_{a}$3	-	-	7	2	.18	.01
F	Phlox longifolia	23	56	56	31	13	24	25	15	.25	.22
F	Polygonum douglasii (a)	-	-	2	-	-	-	1	-	.00	-
F	Ranunculus testiculatus (a)	-	-	5	7	-	-	2	3	.03	.01

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Sisymbrium altissimum (a)	-	-	-	2	-	-	-	1	-	.03
F	Tragopogon dubius	$_{b}$48	$_{a}$4	$_{a}$11	$_{a}$3	22	2	6	1	.08	.03
F	Zigadenus paniculatus	-	4	-	-	-	2	-	-	-	-
Total for Annual Forbs		0	0	243	83	0	0	98	34	1.54	0.40
Total for Perennial Forbs		151	232	322	124	75	112	157	62	6.24	2.58
Total for Forbs		151	232	565	207	75	112	255	96	7.79	2.99

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 18 , Study no: 27

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Artemisia tridentata vaseyana	50	54	13.35	12.59
B	Chrysothamnus nauseosus albicaulis	0	1	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	5	4	.06	.33
B	Gutierrezia sarothrae	18	7	.70	.15
B	Juniperus osteosperma	0	1	.03	1.00
B	Purshia tridentata	29	47	23.27	33.45
Total for Browse		102	114	37.41	47.53

CANOPY COVER -- LINE INTERCEPT
Herd unit 18 , Study no: 27

Species	Percent Cover	
	'97	'02
Artemisia tridentata vaseyana	-	15.17
Gutierrezia sarothrae	-	.33
Juniperus osteosperma	3	.25
Purshia tridentata	-	39.33

Key Browse Annual Leader Growth
Herd unit 18 , Study no: 27

Species	Average leader growth (in)
	'02
Artemisia tridentata vaseyana	9.5
Purshia tridentata	11.6

Point-Quarter Tree Data
Herd unit 18 , Study no: 27

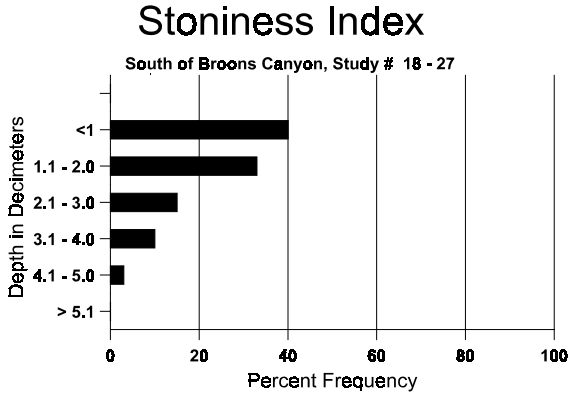
Species	Trees per Acre '02	Average diameter (in) '02
Juniperus osteosperma	62	4.3

BASIC COVER --
Herd unit 18 , Study no: 27

Cover Type	Nested Frequency '97	'02	Average Cover % '83	'89	'97	'02
Vegetation	376	364	2.75	16.00	56.69	66.97
Rock	172	127	5.00	8.75	7.96	8.05
Pavement	123	52	.50	2.00	1.64	.60
Litter	393	384	84.25	65.50	62.09	49.21
Cryptogams	77	41	1.00	.75	1.17	1.01
Bare Ground	122	76	6.50	7.00	3.67	3.98

SOIL ANALYSIS DATA --
Herd Unit 18, Study no: 27, South Broons Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.1	68.0 (15.2)	6.7	50.0	27.4	22.6	3.6	16.8	275.2	0.4



PELLET GROUP FREQUENCY --
Herd unit 18 , Study no: 27

Type	Quadrat Frequency '97	'02	Pellet Transect Pellet Groups per Acre ⁄02	Days Use per Acre (ha) ⁄02
Rabbit	35	36	-	-
Elk	1	-	-	-
Deer	27	24	722	56 (137)
Cattle	1	-	-	-

BROWSE CHARACTERISTICS --
Herd unit 18 , Study no: 27

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	6	-	-	1	-	-	-	-	-	7	-	-	-	140			7
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	12	-	-	-	-	-	-	-	-	12	-	-	-	400			12
	89	-	-	-	1	-	-	-	-	-	1	-	-	-	33			1
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	83	1	8	-	-	-	-	-	-	-	9	-	-	-	300	30	40	9
	89	6	4	1	-	-	-	-	-	-	9	2	-	-	366	21	24	11
	97	52	11	-	3	-	-	-	-	-	64	-	2	-	1320	27	37	66
	02	77	13	-	1	-	-	-	-	-	88	3	-	-	1820	29	38	91
D	83	-	-	1	-	-	-	-	-	-	-	-	1	-	33			1
	89	2	1	-	-	1	-	-	-	-	4	-	-	-	133			4
	97	8	4	-	-	-	-	-	-	-	10	-	-	2	240			12
	02	15	-	-	-	-	-	-	-	-	9	-	-	6	300			15
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	36%	05%	05%	-27%
'89	38%	06%	00%	+69%
'97	18%	00%	05%	+23%
'02	12%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	733	Dec:	5%
'89	532		25%
'97	1700		14%
'02	2220		14%

Chrysothamnus nauseosus albicaulis																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	1	-	-	-	-	-	-	-	1	-	-	-	20	15	20	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	0		-
'02	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	1	-	-	-	-	-	-	-	1	-	-	-	33	20	31	1
	89	1	1	-	-	-	-	-	-	-	2	-	-	-	66	12	12	2
	97	3	-	-	1	-	-	-	-	-	4	-	-	-	80	16	29	4
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120	15	23	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	50%	00%	00%	+50%
'89	25%	00%	00%	-24%
'97	00%	00%	00%	+17%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	66	Dec:	-
	'89	132		-
	'97	100		-
	'02	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	48	-	-	-	-	-	-	-	-	48	-	-	-	1600			48
	89	11	-	-	-	-	-	-	-	-	11	-	-	-	366			11
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	48	-	-	-	-	-	-	-	-	48	-	-	-	1600	13	14	48
	89	27	-	-	-	-	-	1	-	-	28	-	-	-	933	8	10	28
	97	28	-	-	9	-	-	-	-	-	37	-	-	-	740	12	12	37
	02	8	-	-	1	-	-	-	-	-	9	-	-	-	180	10	12	9
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	18	1	-	-	-	-	-	-	-	9	-	4	6	633			19
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-40%
'89	02%	00%	17%	-57%
'97	00%	00%	00%	-74%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	3200	Dec:	0%
	'89	1932		33%
	'97	840		0%
	'02	220		18%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	67	51	1
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	89	94	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	1	-	-	1	-	-	-	20	-	-	1
D	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	1	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+ 0%
'89	50%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	66	Dec:	50%
	'89	66		50%
	'97	0		0%
	'02	20		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
S	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	2	2	-	-	-	-	-	-	-	4	-	-	-	133			4
	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	-	22	3	-	-	-	-	-	-	25	-	-	-	833	45	41	25
	89	2	12	1	-	-	-	1	-	-	16	-	-	-	533	46	86	16
	97	17	4	-	11	1	-	-	-	-	33	-	-	-	660	52	91	33
	02	7	37	14	1	3	9	-	-	-	70	1	-	-	1420	54	94	71
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	2	1	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	3	4	-	-	-	-	-	-	-	5	-	-	2	140			7
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	83%	10%	00%	-31%
'89	70%	15%	00%	+ 2%
'97	15%	00%	00%	+57%
'02	56%	29%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	966	Dec:	0%
	'89	666		15%
	'97	680		0%
	'02	1580		9%